

(12) UK Patent Application (19) GB (11) 2 298 188 (13) A

(43) Date of A Publication 28.08.1996

(21) Application No 9503911.1

(22) Date of Filing 27.02.1995

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(51) INT CL⁶
B65D 25/00

(52) UK CL (Edition O)
B8P PAX PP
U1S S2119

(56) Documents Cited
GB 2150918 A GB 1484602 A GB 0770732 A
WO 95/26916 A1 WO 92/07061 A1 US 4863026 A
US 4044889 A

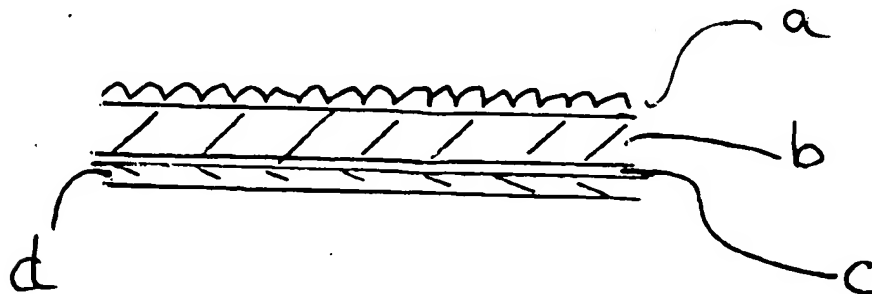
(58) Field of Search
UK CL (Edition O) B8P PAX PP PQ
INT CL⁶ B65D 25/00 25/54 , G02B 27/00 27/02 27/06
27/22 27/24
ONLINE:WPI

(54) Lenticular transparent box

(57) A transparent box has its outer surface covered with the profile of a lenticular lens (a). Provision is made for inserting, accurately aligning and flattening, without need for laminating, a printed paper (c) containing an interleaved matrix of multiple images.

The result is a box through which stereoscopic or animated images may be seen.

Figure 1.



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Figure 1.

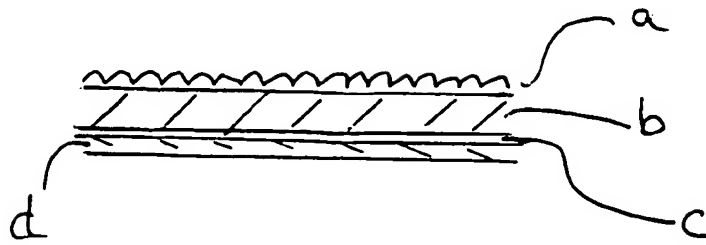
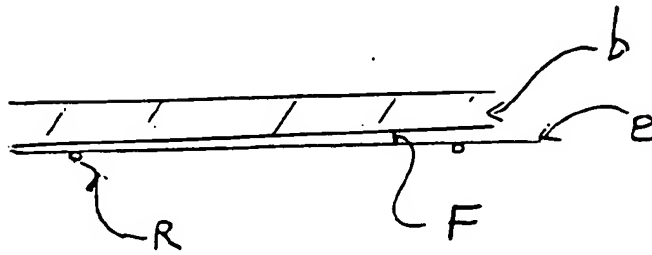


Fig 2.



Lenticulated transparent box.

This invention relates to a transparent container, partially covered with a lenticulated surface, which accepts an inserted piece of printed material. Viewing the box, gives the illusion of either depth or animation or partial opacity, from the printed insert.

Lenticular pictures are well known, and typically consist of a lenticular surface permanently bonded, by lamination, or by integral printing, to an image which, when viewed, reveals a stereoscopic effect, or animation effect, or partially opaque effect. Traditionally, the lenticular surface is plastic with a total thickness that approximates to the focal length of the lens, the lens being permanently attached to the printed surface of the paper or card. Manufacture requires impeccable registration and lamination of the lenticular screen to the printed surface, resulting in the need for production runs and costings that are substantially above conventional printing.

According to the present invention, there is provided a conventional use box, typically in the form of a Compact Laser Disk container, with additional features including that of having a partially lenticulated surface on the outside. Inside the box is inserted a separate piece of printed matter, but printed with a specially multiplexed image rather than a conventional image.

The combination of the lenticulated surface on the box, and the printed insert, gives special effects with minimal additional production requirements, or associated costs.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawing in which:

Figure 1 shows the three essential levels, A,B,C.

A is the lenticular surface which may be applied as a laminate, or encapsulated, or formed as part of the manufacturing process, typically by embossing, moulding, casting, forming or extrusion. The profile of the lenticular surface is determined by the thickness of the wall of the container.

B is the natural thickness of the transparent wall of the container. Its purpose is to act as a focusing medium and whose thickness is, within a 20% tolerance, equal to the focal length of the lenticular lens.

C is the printed surface containing a piece of printed matter, whose image is formed by interlacing two or more images, or viewpoints. When viewed through the lenticular lens, A, either an animated or three dimensional image will be seen. The paper itself may be folded so as give positive positioning once inside the box.

D is an optional backing card, or folded paper, which may be applied behind the printed page in order to keep the printed surface flat against the surface of the container.

Figure 2 shows moulded surface E which acts as a preformed guide alongside the inside edge of the box, and which directs the paper so as to ensure its correct registration with reference to the direction of the lenticles on the surface of the box.

E consists typically of a taper, at angle F, or series of guides or ridges R, alongside which the printed paper is guided on insertion.

Referring to the drawing, the external surface of the box is profiled in the shape of a lenticular lens sheet. A sheet of paper inside the box is printed with an interleaved composite image. The paper is held so as to appear planar flat, and in correct orientation with the direction of the grooves on the box itself. Whilst accurate trimming of the paper in relation to the inside width of the box is normally sufficient for accurate registration, the additional use of tapered guides and tapered paper trim may be adopted to allow for vast manufacturing error tolerances.

The paper is cut so that fits extremely positively in relation to the angle of the lenticular surface of the box as any twist significantly destroys the visual illusion of depth or animation. Various positioning guides within the box also help achieve this registration, since, relative to a lenticular screen with its line rulings running vertically, any 'Up and down' errors are insignificant compared to errors in 'twist'.

The resulting assembly acts as a conventional lenticular image but without the expense of having conventional laminated lenticular prints.

It is essential to keep the printed paper flat, as otherwise the lenticular lens will be out of focus and the illusion will be lost. Card, or creased pper, placed behind the printed image so as sandwich the print is one solution. Another method is to sandwich the print between components already in the box. The mounting boss for a Compact Disk is one natural solution involving no additional elements.

CLAIMS.

1. A transparent box, partially and permanently covered with a lenticulated surface on its front and/or reverse face.
2. A transparent box with lenticulations running vertically for 3-D effects and side to side animation, and/or horizontally for 'over and under' animation effects.
3. A lenticulated transparent box containing a loose printed insert on which is printed interlaced images representing 3-D or animation or changing image picture.
4. A lenticulated transparent box containing a printed paper having interlaced images, and which is kept flat against the internal surface of the box by the natural action of the contents.
5. A transparent lenticulated box whose wall thickness is within 20% of the focal length of the lenticular lens.
6. A transparent lenticulated box containing a printed paper having interlaced images, and is kept in correct vertical and/or horizontal alignment by the action of positioning arms inside the box,
7. A transparent lenticulated box whose lenticles and whose wall thickness and lens pitch are selected to be tolerant to production errors in wall thickness and paper flatness.
8. A transparent lenticulated box into which any number of pages containing appropriately interlaced images may be substituted.
9. A transparent lenticulated box into which may be placed any number of different printed images, providing each print has the correspondingly correct and identical pitch frequency.
10. A transparent lenticulated box whose inner edge may be tapered or fitted with guides so as allow for correct lateral registration of the printed insert.



Application No: GB 9503911.1
Claims searched: 1 to 10

Examiner: Mike Henderson
Date of search: 29 March 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.O): B8P (PAX, PP, PQ)
Int CI (Ed.6): B65D 25/00, 25/54 G02B 27/00, 27/02, 27/06, 27/22, 27/24
Other: ONLINE:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2150918 A (PEAK PLASTIC AND METAL PRODUCTS LTD) (Whole specification relevant)	1
X	GB1484602 (TOPPAN PRINTING CO LTD) (Whole specification relevant)	1 to 10
X	GB 770732 (SCHMETZ) (Whole specification relevant)	1 and 2
X,E	WO 95/26916 A1 (INSIGHT INC) (Whole specification relevant)	1 to 10
X	WO 92/07061 A1 (REULECKE et al) (See particularly the Abstract)	1
X	US 4863026 (PERKOWSKI) (Whole specification relevant)	1 to 10
X	US 4044889 (ORENTREICH) (Whole specification relevant)	1 to 3

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